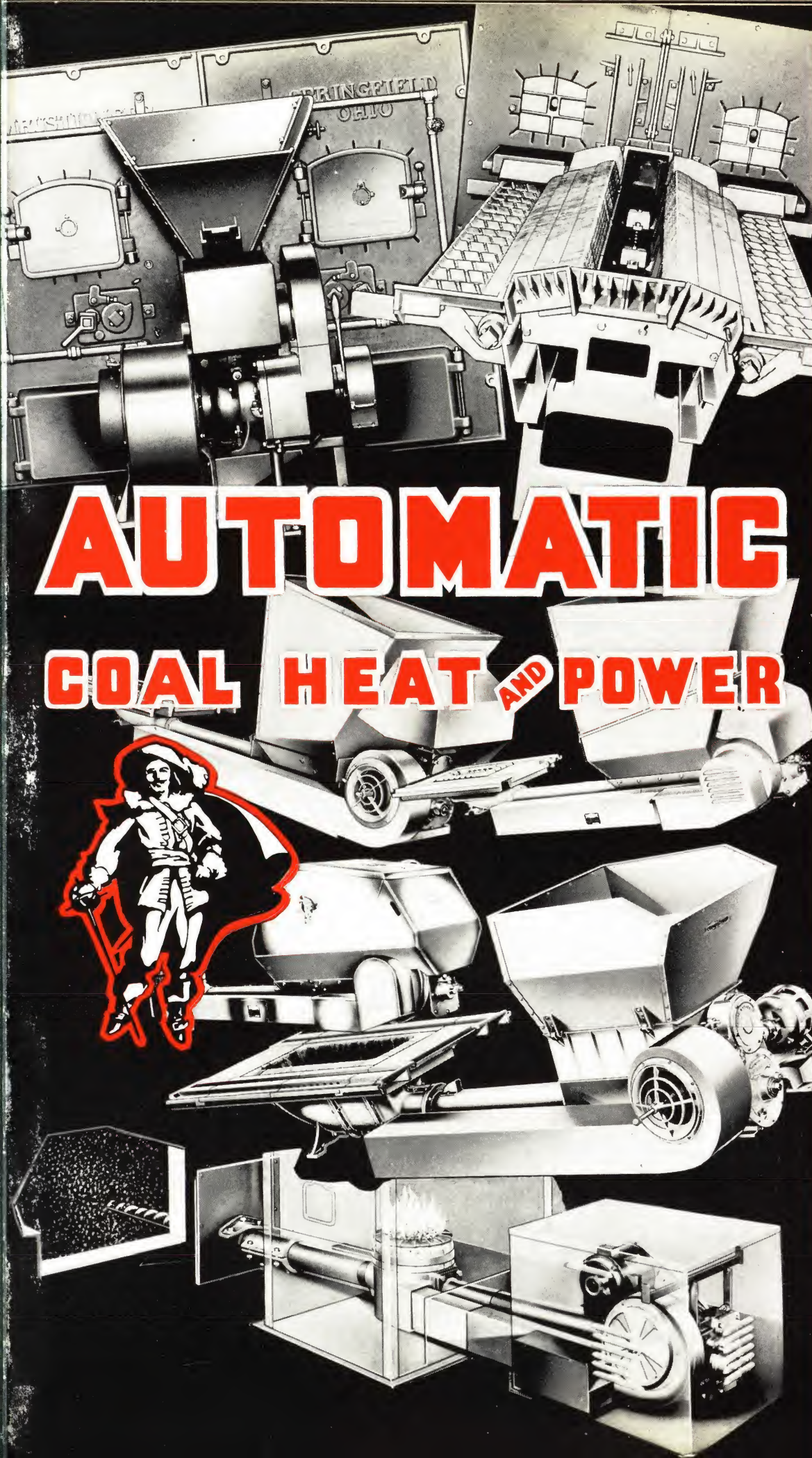




AUTOMATIC

COAL HEAT AND POWER



Combustioneer

FOR APARTMENTS AND FACTORIES • HOMES • SCHOOLS



Combustioneer

DIVISION OF THE STEEL PRODUCTS ENGINEERING CO.
SPRINGFIELD, OHIO

BACK of the COMBUSTIONEER Automatic Coal Burner stands an organization of strength, stability and integrity, whose experience dates back to the earliest pioneer days of the small stoker.

The men who today determine the policies and guide the destiny of COMBUSTIONEER, are the men who developed, sold and installed the first of the successful small stokers in this country. In the field of coal, heat and power their experience covers a period of more than a quarter of a century.

COMBUSTIONEER is today in its twelfth year of successful operation. COMBUSTIONEER stokers are built completely

in our own modern plant. In Springfield, Ohio, are located our Main Offices and Factory; in Chicago, Illinois, is maintained a complete Sales and Engineering Branch; Sales offices are located in every section of the United States.

The established and demonstrated merit and quality of COMBUSTIONEER is proved by its consistent and steady growth in every state in this country where bituminous coal is burned, as well as by its success in foreign countries.

RESEARCH AND DESIGN

Today's line of COMBUSTIONEER is the finest in design, quality, workmanship and performance in the history of the company. Outstanding features, such as the Breathing Fuel Bed; Automatic Air Control, Automatic Safety Clutch insures performance second to none.

A completely equipped experimental laboratory is con-

stantly engaged in research for improvements in design, construction and performance. Quantity production, favorable contracts and large volume sales enable COMBUSTIONEER to offer unusually attractive prices—and it is our confident belief that the value of COMBUSTIONEER is unmatched.

SERVICE TO ARCHITECTS

A COMBUSTIONEER is available for practically any heating or power job. In addition to boiler applications it can easily be adapted to many special jobs. Architects who are concerned in the installation of Automatic Coal Burning

equipment in homes, factories, institutions, apartment buildings or special applications are urged to consult our local dealers or write directly to our Main Office. A competent staff of trained engineers will be at your service.

• Here in the Engineering Department is where the precision construction of Combustioneer originates.



• Combustioneer Automatic Coal Burners are given grueling tests in the Research and Testing Laboratory.



• Here the precision-built parts are assembled to make completed Combustioners.



SELECTING THE RIGHT *Combustioneer*

The selection of the proper COMBUSTIONEER involves knowing the B.t.u. value of the coal to be used, the capacity and rating of the boiler, and the load to be carried.

COMBUSTIONEER can be selected by referring to the "Selection Chart" shown below. The choice of ample size stoker for the particular job to be done is insurance of longer life and lower operating costs; it also results in low fuel consumption and quick pick-up response to load demands.

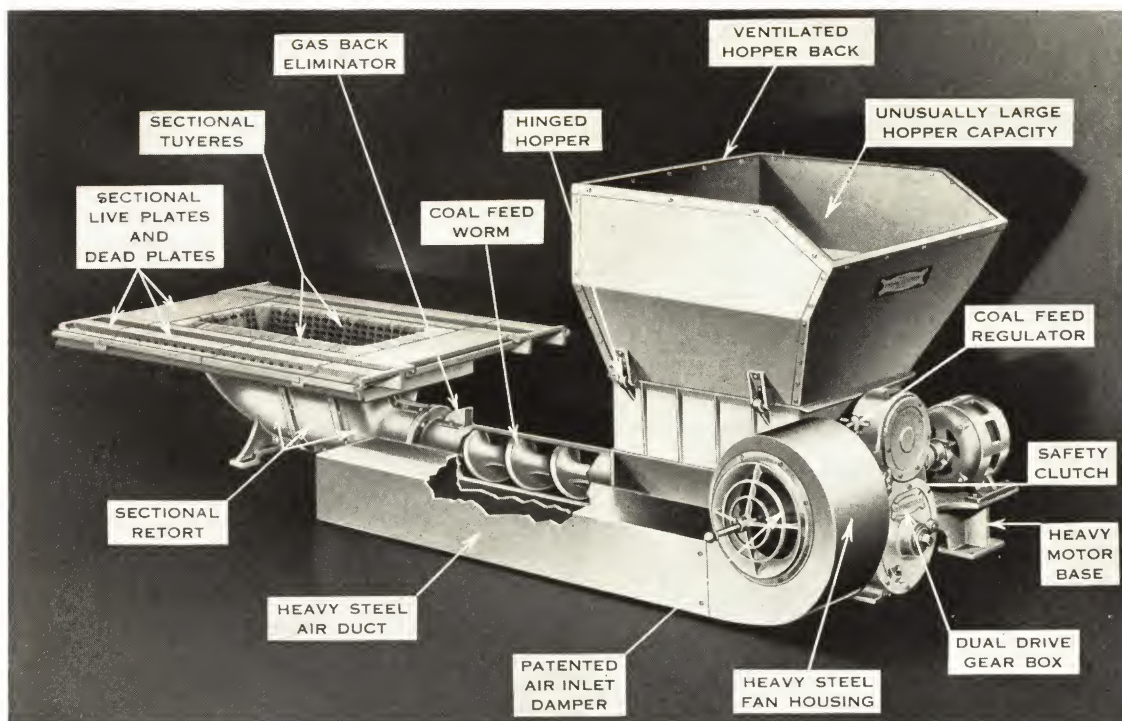
When these three factors are known, the correct size of

SELECTION DATA COMMERCIAL MODELS

Coal B.t.u.	Steam Sq. ft. E.D.R.	Hot Water Sq. ft. E.D.R.	Boiler Hp.	Stoker Model	Coal Burning Capacity		Hopper Capacity Lbs. Approx.	Overall Dimensions Inches			Page No.
					Max.	Min.		Lgth.	Wdth.	Ht.	
11500	2156	3450	15	7½	75	25	700	98	27½	31¾	7
	2875	4600	21	10	100	33	700	103	27½	31¾	7
	4672	7475	33	15	150	17	750	119	40¼	47½	8
	6228	9964	46	20	200	40	750	118⅝	40¼	47½	8
	7786	12458	56	25	250	40	1000	116¾	42½	54½	9
	10901	17442	78	35	375	40	1000	130¾	43¾	56	9
	16771	26829	120	50	600	83	1250	136½	67½	51½	10
	23479	37566	168	70	700	83	1250	148½	67½	51½	10
	30187	48300	216	90	900	90	1250	150¾	74½	51½	10
12500	2344	3750	17	7½	75	25	700	98	27½	31¾	7
	3125	5000	22	10	100	33	700	103	27½	31¾	7
	5078	8125	36	15	150	17	750	119	40¼	47½	8
	6769	10832	49	20	200	40	750	118⅝	40¼	47½	8
	8464	13541	61	25	250	40	1000	116¾	42½	54½	9
	11849	18958	85	35	375	40	1000	130¾	43¾	56	9
	18229	29162	131	50	600	83	1250	136½	67½	51½	10
	25521	40832	183	70	700	83	1250	148½	67½	51½	10
	32812	52500	235	90	900	90	1250	150¾	74½	51½	10
14000	2625	4200	19	7½	75	25	700	98	27½	31¾	7
	3500	5600	25	10	100	33	700	103	27½	31¾	7
	5687	9100	41	15	150	17	750	119	40¼	47½	8
	7584	12132	53	20	200	40	750	118⅝	40¼	47½	8
	9479	15166	68	25	250	40	1000	116¾	42½	54½	9
	13271	21233	95	35	375	40	1000	130¾	43¾	56	9
	20417	32662	146	50	600	83	1250	136½	67½	51½	10
	28583	45732	203	70	700	83	1250	148½	67½	51½	10
	36750	58800	264	90	900	90	1250	150¾	74½	51½	10

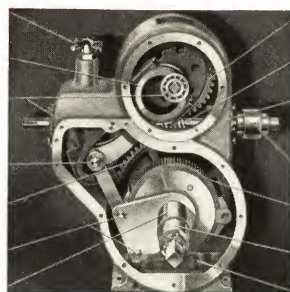
DOMESTIC MODELS

Coal B.t.u.	Steam Sq. ft. E.D.R.	Hot Water Sq. ft. E.D.R.	Warm Air Pipe Area Sq. in.	Stoker Model	Coal Burning Capacity		Hopper Capacity Lbs. Approx.	Overall Dimensions Inches			Page No.
					Max.	Min.		Lgth.	Wdth.	Ht.	
11500	517	827	857	2	20	12	400	80 ⅜	24½	30¾	12
	720	1150	1190	2½	25	8.17	400	80 ⅜	25½	30¾	12
	1006	1610	1665	3½	35	27.19	400	80 ⅜	25½	30¾	12
	1440	2300	2380	5	50	35.16	400	89	25½	30¾	12
12500	562	900	930	2	18	12	400	80 ⅜	24½	30¾	12
	782	1250	1290	2½	25	8.17	400	80 ⅜	25½	30¾	12
	1094	1750	1811	3½	35	27.19	400	80 ⅜	25½	30¾	12
	1564	2500	2580	5	50	35.16	400	89	25½	30¾	12
14000	630	1008	1044	2	18	12	400	80 ⅜	24½	30¾	12
	875	1400	1450	2½	25	8.17	400	80 ⅜	25½	30¾	12
	1225	1960	2029	3½	35	27.19	400	80 ⅜	25½	30¾	12
	1750	2800	2900	5	50	35.16	400	89	25½	30¾	12

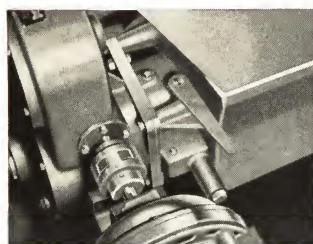


Combustioneer CONSTRUCTION

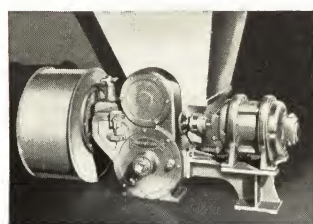
COMBUSTIONEER is a proved product. It is the fruition of many years of experience in the design, construction and operation of coal burning equipment. The entire engineering profession recognizes the principles used in COMBUSTIONEER construction as sound and correct.



GEAR BOX



SAFETY CLUTCH



FRONT CONSTRUCTION

GEAR BOX

It is of a heavy duty, intermittent feed type designed to produce the COMBUSTIONEER Breathing Fuel Bed action, so essential to the efficient burning of coal. Has only three rotating parts. Positive splash and contact oil system. Every part accessible from the front. From six to thirteen rates of coal feed. Rates of feed may be changed without stopping stoker.

SAFETY CLUTCH

In case of overload, COMBUSTIONEER's patented Safety Clutch automatically and immediately disconnects the coal feed worm from the driving gear. Shearing pins are eliminated. Adjustable to suit any kind of coal used. Reengaged by simply pulling a lever.

FRONT CONSTRUCTION

This shows the construction used in the larger sizes of COMBUSTIONEER. Desired coal feeds are obtained by turning the coal feed handle. Indicator plate shows the amount of coal being fed.

RETORT

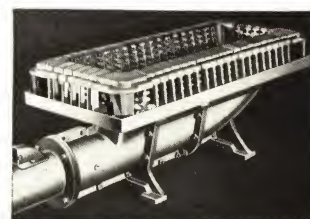
Combustion starts in the retort. Here is provided the proper mixture of air and coal for efficient combustion. The COMBUSTIONEER Retort is built in sections to take care of expansion and contraction. Sides and ends are shaped to allow free movement of air to tuyere blocks and to assure free upward flow of coal. Designed to prevent backward flow of air into hopper.

AIR SYSTEM (Hand Control)

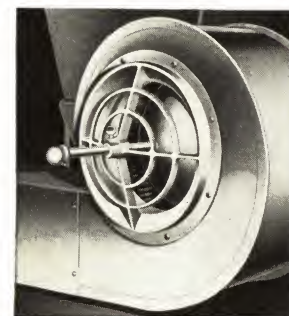
The fan is especially designed for quietness and balance. Surging of air current and uneven static pressures eliminated. Patented, micrometer adjustment air control insures exact amount of air necessary for best combustion.

ACCESS PLATE

This patented feature permits removal of obstructions from feed worm without emptying coal hopper. Located at throat of coal feed tube.



RETORT



AIR SYSTEM



ACCESS PLATE

Combustioneer

AUTOMATIC AIR ADJUSTER

The need for automatically controlling the air supply has been recognized since stokers were first built. The COMBUSTIONEER Automatic Air Adjuster is of the static type. It affords the broadest possible range of accurate draft control.

Once adjusted for a specific installation and type of coal, the COMBUSTIONEER Automatic Air Adjuster provides and maintains, without further attention, the proper fuel-air ratio for efficient and economical operation. Fuel bed, stack draft or load changes are immediately compensated. The result is uniformly high efficiency, better clinker conditions and a marked reduction in fly ash.

Since the COMBUSTIONEER Automatic Air Adjuster operates on static pressure, it closes at once when the stoker stops. By cutting down excess air supply, longer idle periods result. When the stoker again starts, the damper cannot open until pressure has been built up. Because it opens slowly the tendency to blow fly ash out of the fire into the tubes is reduced.

For any given coal there is required a definite weight of air per pound of coal to supply the oxygen required for combustion.

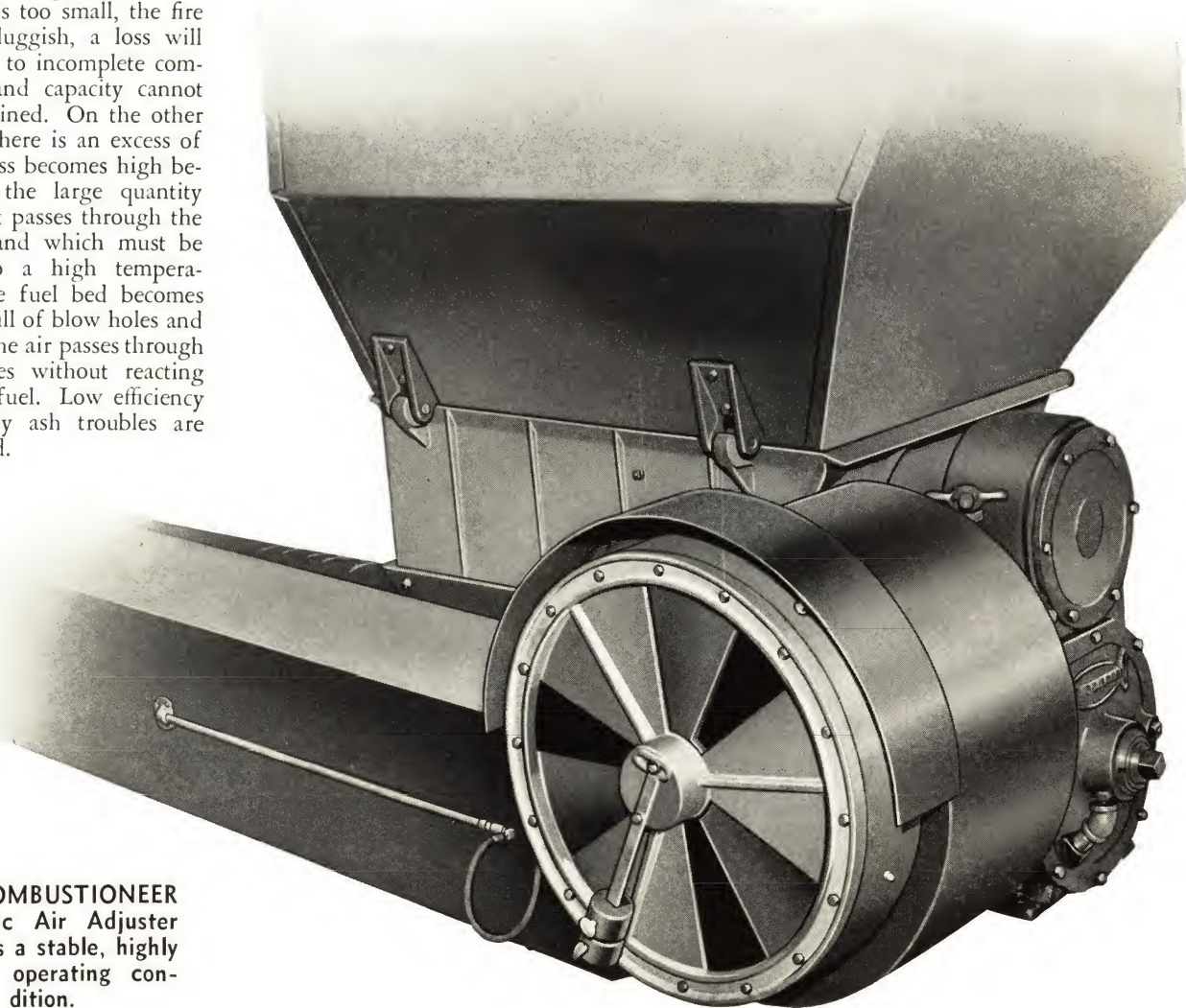
When the quantity of air supplied is too small, the fire will be sluggish, a loss will occur due to incomplete combustion, and capacity cannot be maintained. On the other hand, if there is an excess of air, the loss becomes high because of the large quantity of air that passes through the furnace, and which must be heated to a high temperature. The fuel bed becomes thin; is full of blow holes and much of the air passes through these holes without reacting with the fuel. Low efficiency results; fly ash troubles are aggravated.

A fuel bed offers resistance to the passage of air. This resistance varies with the thickness and density of the fuel bed.

If the fan is run with a wide open damper, the air supply will be too great for a thin fire bed, so we close the damper. If we close it even a little too much, we reduce the rate of combustion below the rate of coal feed and the fuel bed builds up, increases the resistance and reduces the air supplied.

It is practically impossible to manually regulate the air supply to conform to the always changing fuel bed conditions.

The purpose of the COMBUSTIONEER Automatic Air Adjuster is to compensate for variations in fuel bed resistance as rapidly as they occur. The damper opening being corrected automatically to the proper position for maintaining the pre-determined air supply, any tendency for change in fuel bed conditions is counteracted immediately by this amazingly simple device.



The COMBUSTIONEER Automatic Air Adjuster maintains a stable, highly efficient operating condition.

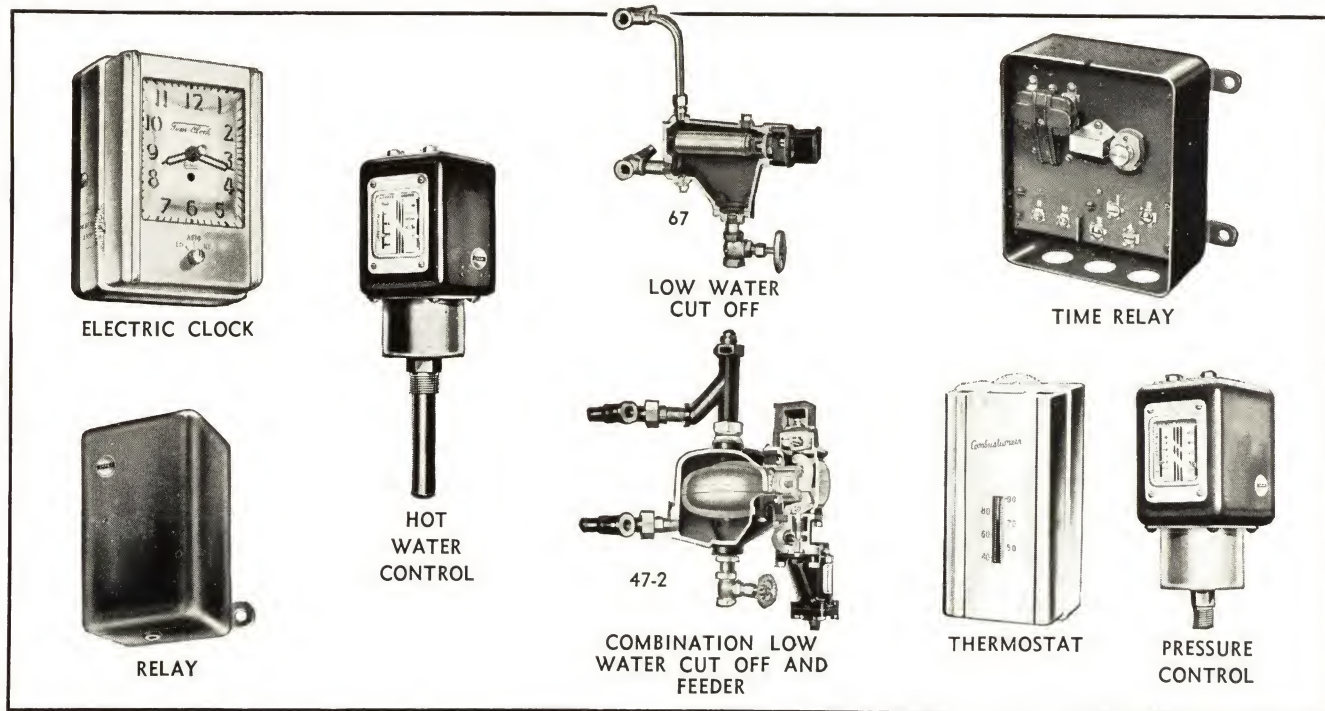
Combustioneer AUTOMATIC CONTROLS

Successful automatic firing demands correct, automatic, dependable controls. The controls used with COMBUSTIONEER stokers have been designed to accomplish specific results. They are carefully checked for accuracy of operation and can be depended upon implicitly.

Any predetermined degree of temperature or pressure is

maintained automatically. Firing is controlled as required. Electrical control instruments for any type or condition of installation are provided. They have been carefully selected. They are essential to successful COMBUSTIONEER operation.

Some of these controls are shown below.



Combustioneer WORM FEED COMMERCIAL MODELS

In the modern boiler room there is a new standard of boiler firing efficiency and control. Improved methods of burning coal have brought about this new standard. Controlled firing and burning of coal is today an essential in the profitable production of steam heat or power.

COMBUSTIONEER is a pioneer in the stoker industry. Its practical value has been proved in thousands of installations over a period of many years. Near you is a COMBUSTIONEER installation. It may be in an apartment building—in a factory—laundry—greenhouse—dairy—school building—hospital or similar boiler plant. Wherever it is, it is working tirelessly, automatically making and maintaining steam pressure or heat. It is responding instantly to every fluctuating demand for heat or steam—transforming every dollar's worth of coal into useful heat or energy.

Coal, always the preferred fuel, is given a new value by the installation of COMBUSTIONEER—a new value in economy and efficiency.

For commercial installations COMBUSTIONEER has designed a complete line that will meet every requirement. On the following pages are illustrated and described all COMBUSTIONEER models ex-

cept our No. 120. Data for this particular model will be furnished on request.

COMBUSTIONEER utilizes the most modern developments of efficient fuel burning. Coal is fed automatically, as required, into the retort and to the fire from below. The air supply is automatically regulated to meet the varying conditions of the fuel bed and load.

With COMBUSTIONEER coal is burned correctly, thus securing the greatest amount of heat, hot water or steam per pound of fuel. Its operation costs less because less expensive sizes of coal may be used. It further reduces fuel bills, burning all the combustible in the fuel. Volatile gases, so often wasted in the form of smoke, are turned into useful, efficient heat. Highest boiler efficiency is secured because COMBUSTIONEER keeps an evenly distributed bed of progressively burning coal in the fire box—scientifically fired and fed.

Due to COMBUSTIONEER's highly efficient combustion and the resultant clean, sootless condition of the boiler tubes, it is possible to greatly increase the output and rating of a hand-fired boiler. Increased boiler capacities of from 30 to 50 per cent may be secured. Loads can be pushed more rapidly. Constant, uniform temperature or pressure is secured even under wide fluctuations because it burns coal only as needed and in direct proportion to load requirements.

SMALL COMMERCIAL MODEL

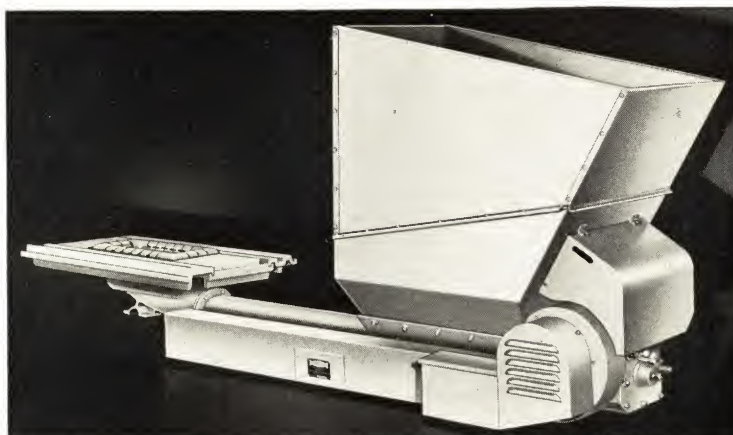
COAL BURNING CAPACITY—

25, 50, 75 lbs. per hr.

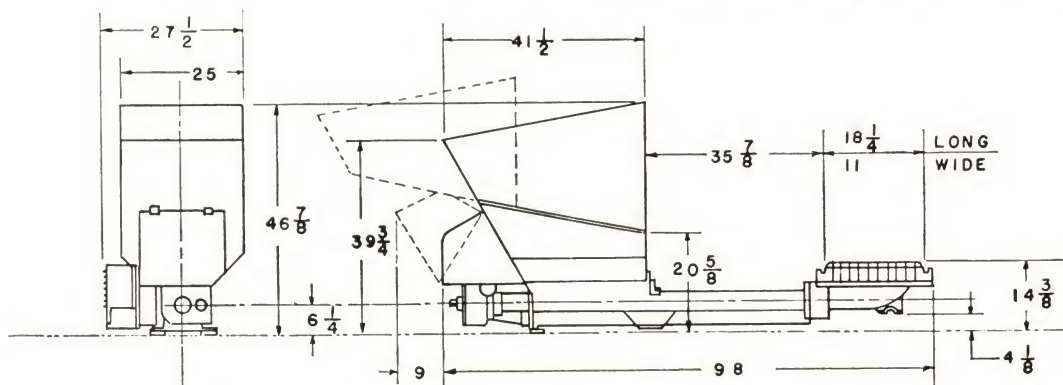
HOPPER CAPACITY—700 lbs.

SIZE OF MOTOR— $\frac{1}{3}$ hp.

Patented, intermittent feed gear box, affording the Breathing Fuel Bed. SAFETY CLUTCH—no shear pins. Steel hopper and base—LARGE sliding hopper—rubber mounted motor—belt driven. Sirocco type fan with patented Automatic Respirator. Air controlled at intake. Patented access plate. Sectional tuyeres and dead plates. COMBUSTIONEER automatic controls. Furnished with closed hopper and longer feed worm on special order.



TYPICAL MODEL NOS. 7½ AND 10



CAPACITIES AND RATINGS

Model 7½	Coal Burning Cap. Lbs. per hr.		Approx. Cap. Hopper		Motor Drive
	Max.	Min.	Cu. ft.	Lbs.	Horsepower
	75	25	8 or 14	400 or 700	1/3

Model 10	Coal Burning Cap. Lbs. per hr.		Approx. Cap. Hopper		Motor Drive
	Max.	Min.	Cu. ft.	Lbs.	Horsepower
	100	35	8 or 14	400 or 700	½

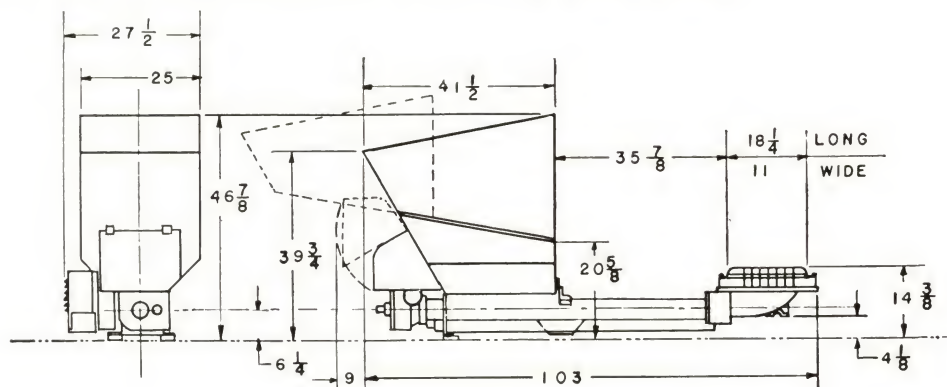
COAL BURNING CAPACITY—

35, 70, 100 lbs. per hr.

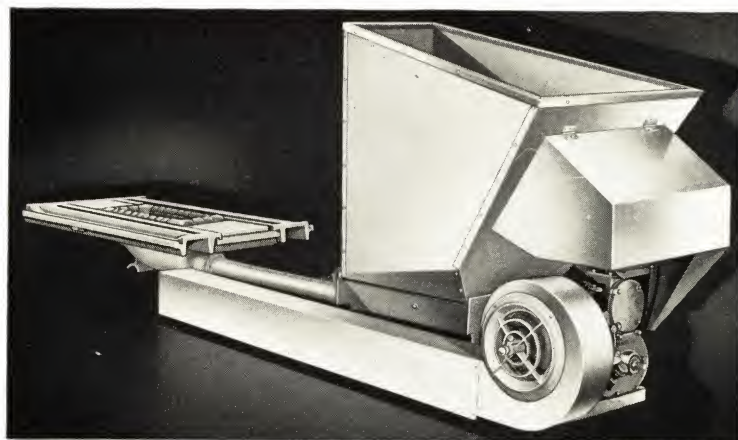
HOPPER CAPACITY—700 lbs.

SIZE OF MOTOR— $\frac{1}{2}$ hp.

The patented intermittent feed gear box affords the Breathing Fuel Bed. Gears protected by safety clutch—no shear pin. Hopper and base of steel. Large sliding hopper. The motor is mounted on rubber. Belt driven. Air controlled at the intake of the Sirocco type fan by means of the patented Automatic Respirator. Patented access plate. Sectional tuyeres and dead plates. COMBUSTIONEER Automatic controls used. Furnished with closed hopper and longer feed worm if desired.



HEAVY DUTY MODEL



TYPICAL MODEL NOS. 15 AND 20

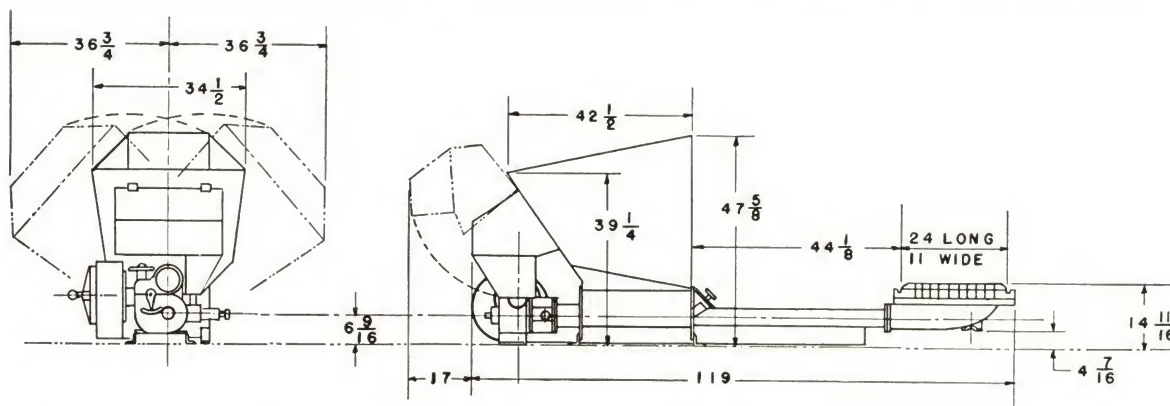
COAL BURNING CAPACITY—

20 to 150 lbs. per hr.

HOPPER CAPACITY—700 lbs.

SIZE OF MOTOR—1 hp.

This is the smallest of the HEAVY DUTY UNITS. Employs the patented intermittent feed gear box affording the Breathing Fuel Bed. Gear box protected by the safety clutch. Hopper base of steel. Hopper of steel and can be tipped to either side. The motor is belt connected to the gear box. Patented air control permits proper static pressure. Sirocco type fan. Sectional tuyeres and dead plates. Patented access plate. COMBUSTIONEER controls used. Furnished with longer feed worm if desired.



COAL BURNING CAPACITY—

40 to 200 lbs. per hr.

HOPPER CAPACITY—700 lbs.

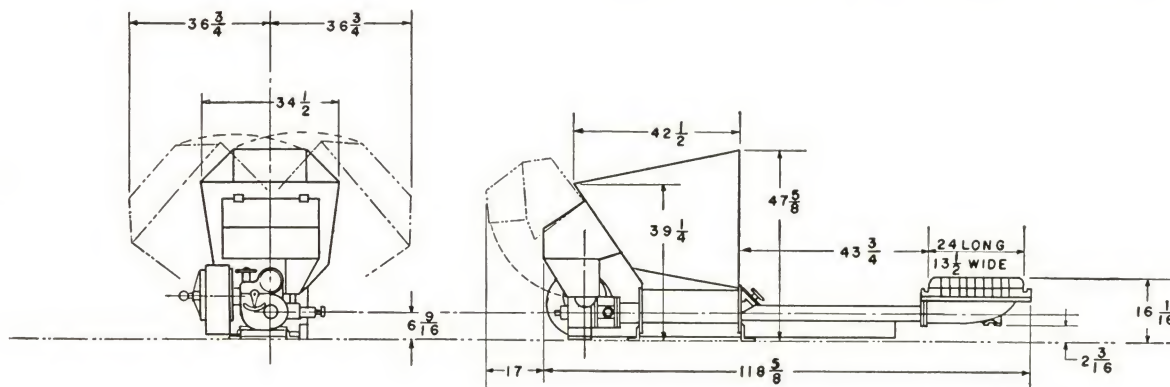
SIZE OF MOTOR—1½ hp.

Employs the patented intermittent feed gear box affording the Breathing Fuel Bed. Gear box protected by the safety clutch. Hopper base of steel. Hopper of steel. Can be tipped to either side. Motor is belt connected to the gear box. Patented air control permits proper static pressure. Sirocco type fan. Sectional tuyeres and dead plates. Patented access plate. COMBUSTIONEER controls used. Furnished with longer feed worm if desired.

CAPACITIES AND RATINGS

Model 15	Coal Burning Cap. Lbs. per hr.		Approx. Cap. Hopper		Motor Drive
	Max.	Min.	Cu. ft.	Lbs.	Horsepower
	150	30	15	750	1

Model 20	Coal Burning Cap. Lbs. per hr.		Approx. Cap. Hopper		Motor Drive
	Max.	Min.	Cu. ft.	Lbs.	Horsepower
	200	40	15	750	1½



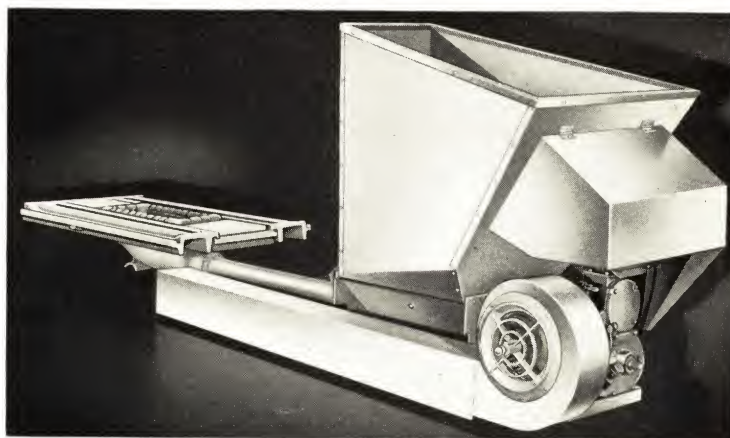
HEAVY DUTY MODEL

COAL BURNING CAPACITY—
40 to 250 lbs. per hr.

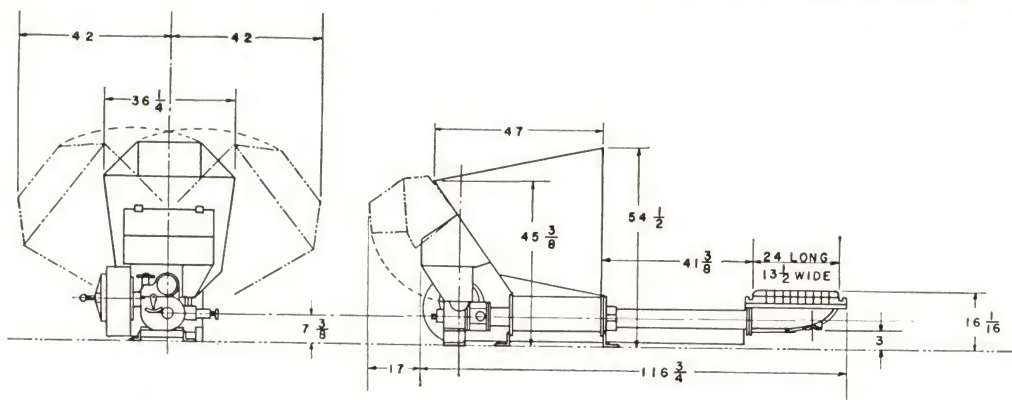
HOPPER CAPACITY—1000 lbs.

SIZE OF MOTOR—1½ hp.

Equipped with the patented intermittent feed gear box affording the Breathing Fuel Bed. Safety clutch protects the gear box. Steel hopper base. Steel hopper that can be tipped to either side. Hopper side nearest the boiler is ventilated. Motor belt connected to gear box. Patented air control Sirocco type fan. Patented access plate. Sectional tuyeres and dead plates. COMBUSTIONEER controls used. Longer feed worm supplied if required.



TYPICAL MODEL NOS. 25 AND 35



CAPACITIES AND RATINGS

Model 25	Coal Burning Cap. Lbs. per hr.		Approx. Cap. Hopper		Motor Drive
	Max.	Min.	Cu. ft.	Lbs.	Horsepower
	250	40	20	1000	1½

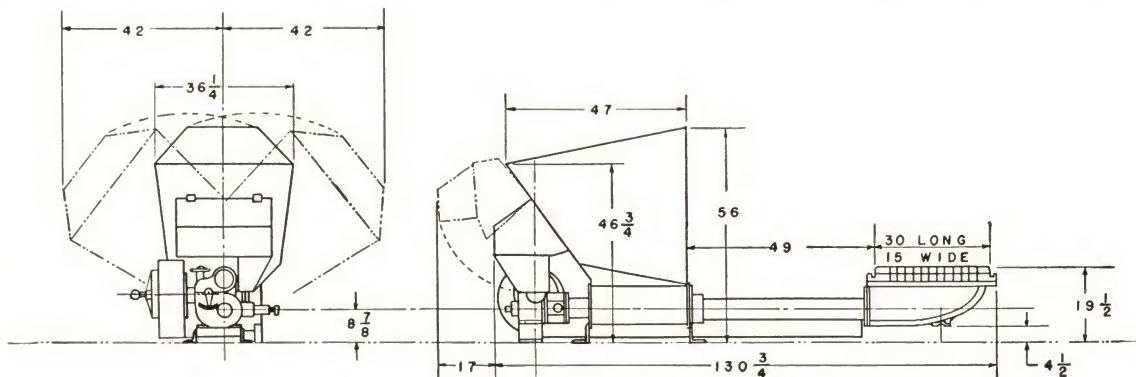
Model 35	Coal Burning Cap. Lbs. per hr.		Approx. Cap. Hopper		Motor Drive
	Max.	Min.	Cu. ft.	Lbs.	Horsepower
	375	70	20	1000	2

COAL BURNING CAPACITY—
40 to 375 lbs. per hr.

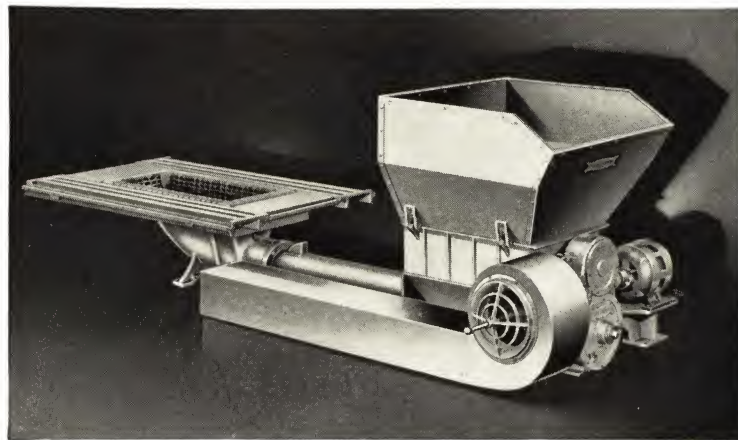
HOPPER CAPACITY—1000 lbs.

SIZE OF MOTOR—2 hp.

Equipped with the patented intermittent feed gear box affording the Breathing Fuel Bed. Safety clutch protects the gear box. Steel hopper base. Steel hopper that can be tipped to either side. Hopper side nearest the boiler is ventilated. Motor belt connected to gear box. Patented air control. Sirocco type fan. Patented access plate. Sectional tuyeres and dead plates. COMBUSTIONEER controls used. Longer feed worm supplied if required.



HEAVY DUTY MODEL



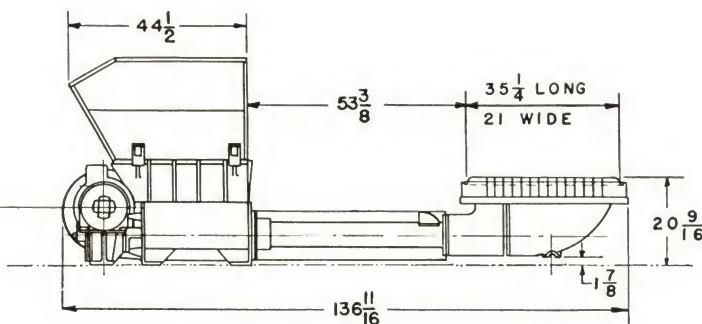
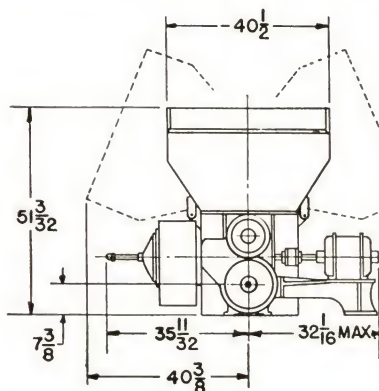
TYPICAL MODEL NOS. 50, 70, 90

COAL BURNING CAPACITY—
75 to 600 lbs. per hr.

HOPPER CAPACITY—1250 lbs.

SIZE OF MOTOR—3 hp.

Equipped with the patented intermittent feed gear box affording the Breathing Fuel Bed. Safety clutch protects the gear box. Steel hopper base. Steel hopper that can be tipped to either side. Hopper side nearest the boiler is ventilated. Motor direct connected to gear box. Patented air control. Sirocco type fan. Patented access plate. Sectional tuyeres and dead plates. COMBUSTIONEER controls used. Longer feed worm supplied if required.



No. 70, COAL BURNING CAPACITY—
85 to 700 lbs. per hr.

No. 90, COAL BURNING CAPACITY—
90 to 900 lbs. per hr.

HOPPER CAPACITY—1250 lbs.

No. 70, SIZE OF MOTOR—3 hp.

No. 90, SIZE OF MOTOR—5 hp.

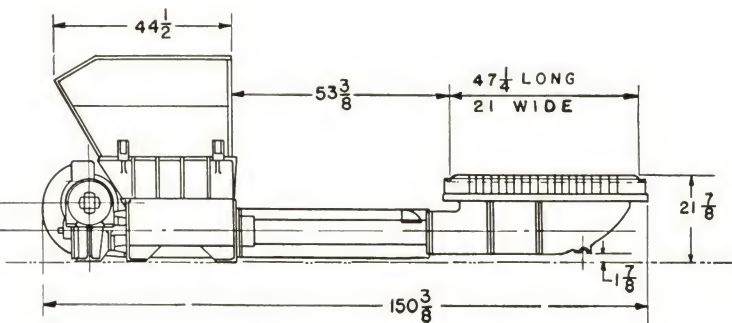
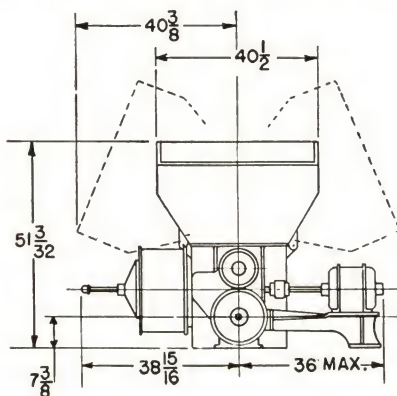
Equipped with the patented intermittent feed gear box affording the Breathing Fuel Bed. Safety clutch protects the gear box. Steel hopper base. Steel hopper that can be tipped to either side. Hopper side nearest the boiler is ventilated. Motor directed connected to gear box. Patented air control. Sirocco type fan. Patented access plate. Sectional tuyeres and dead plates. COMBUSTIONEER controls used. Longer feed worm supplied if required.

CAPACITIES AND RATINGS

Model 50	Coal Burning Cap. Lbs. per hr.		Approx. Cap. Hopper		Motor Drive
	Max.	Min.	Cu. ft.	Lbs.	Horsepower
	600	75	25	1250	3

Model 70	Coal Burning Cap. Lbs. per hr.		Approx. Cap. Hopper		Motor Drive
	Max.	Min.	Cu. ft.	Lbs.	Horsepower
	700	85	25	1250	3

Model 90	Coal Burning Cap. Lbs. per hr.		Approx. Cap. Hopper		Motor Drive
	Max.	Min.	Cu. ft.	Lbs.	Horsepower
	900	90	25	1250	5



BIN-FEED HEAVY DUTY MODELS

For HEAVY DUTY COMMERCIAL SERVICE

COMBUSTIONEER commercial models are also available in Bin Feed types. Coal is carried directly from the main coal bin to the boiler, eliminating the necessity of filling the hopper by hand. The fuel is carried by means of a power-

ful, quiet screw conveyor. These conveyors are available in varying lengths and may enter the boiler from the side, front or rear. Full details of standard or special applications will be furnished on request.



COMBUSTIONEER BIN FEEDER

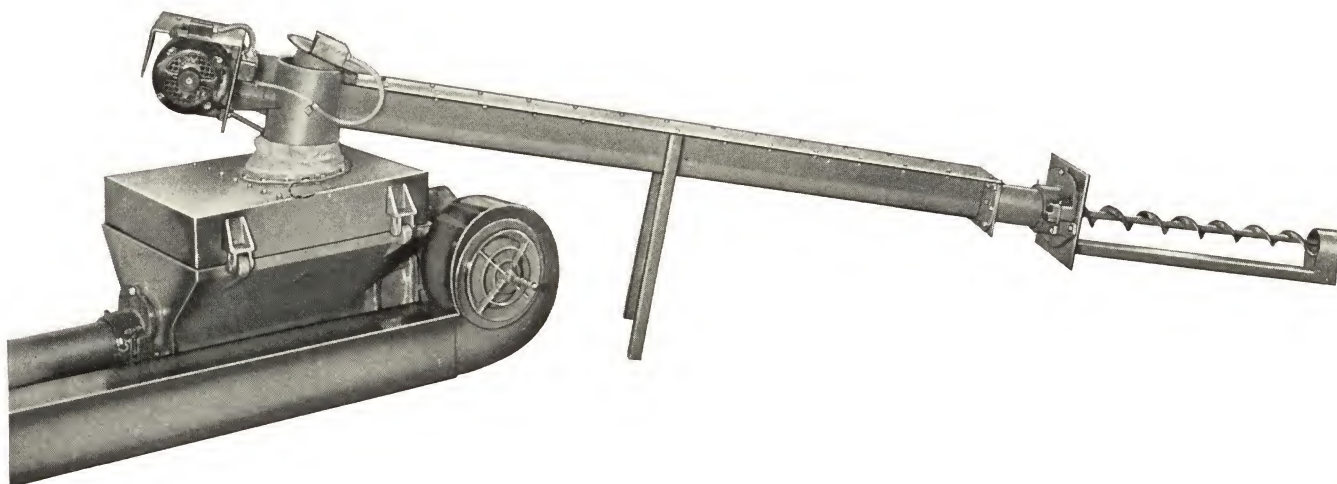
Below is illustrated the COMBUSTIONEER Bin Feeder. To a standard COMBUSTIONEER Stoker this feeder is attached. Coal is carried by a powerful steel conveyor screw from the coal storage bin to the stoker hopper. The screw is designed to prevent packing of coal in the tube; is ruggedly built to insure long life and insures a continuous flow of coal to the hopper. It is designed for commercial models only.

The bin-feeder conveyor is powered with a geared head

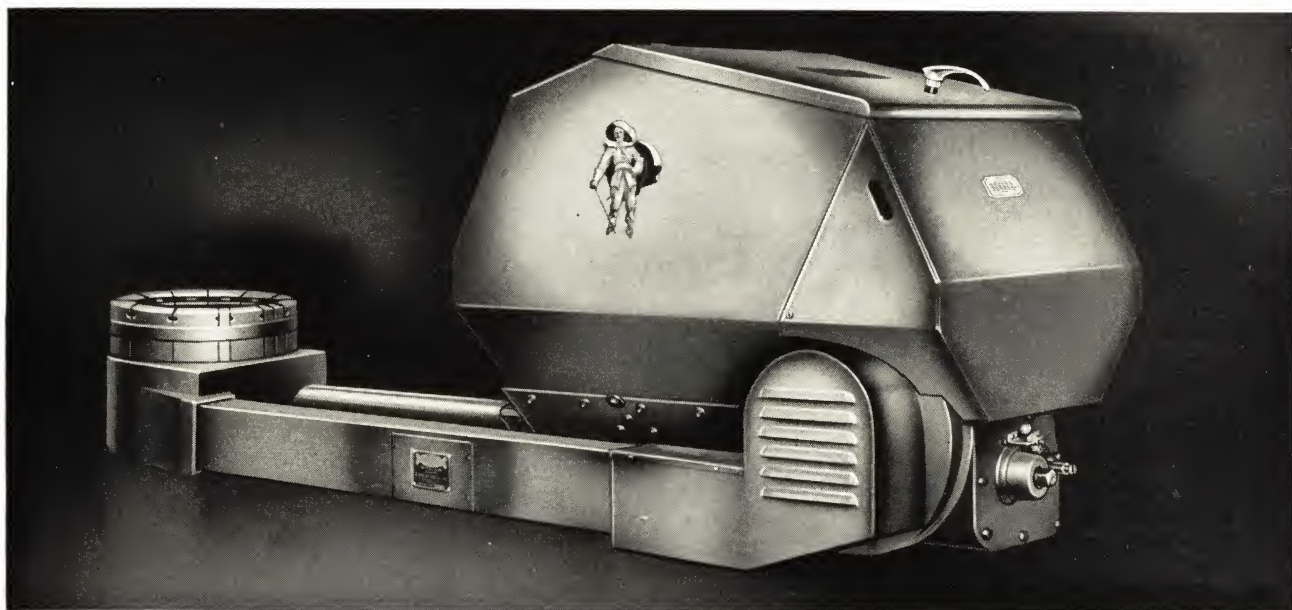
motor and automatically controlled by means of an electric switch.

The switch automatically cuts off the flow of coal from the bin to the hopper when the hopper is filled to capacity. As the coal is fed from the hopper to the boiler and the coal level in the hopper lowers, the switch again automatically starts the flow of coal from the bin.

The bin-feeder can be swung at any desired angle.



Combustioneer DOMESTIC MODELS



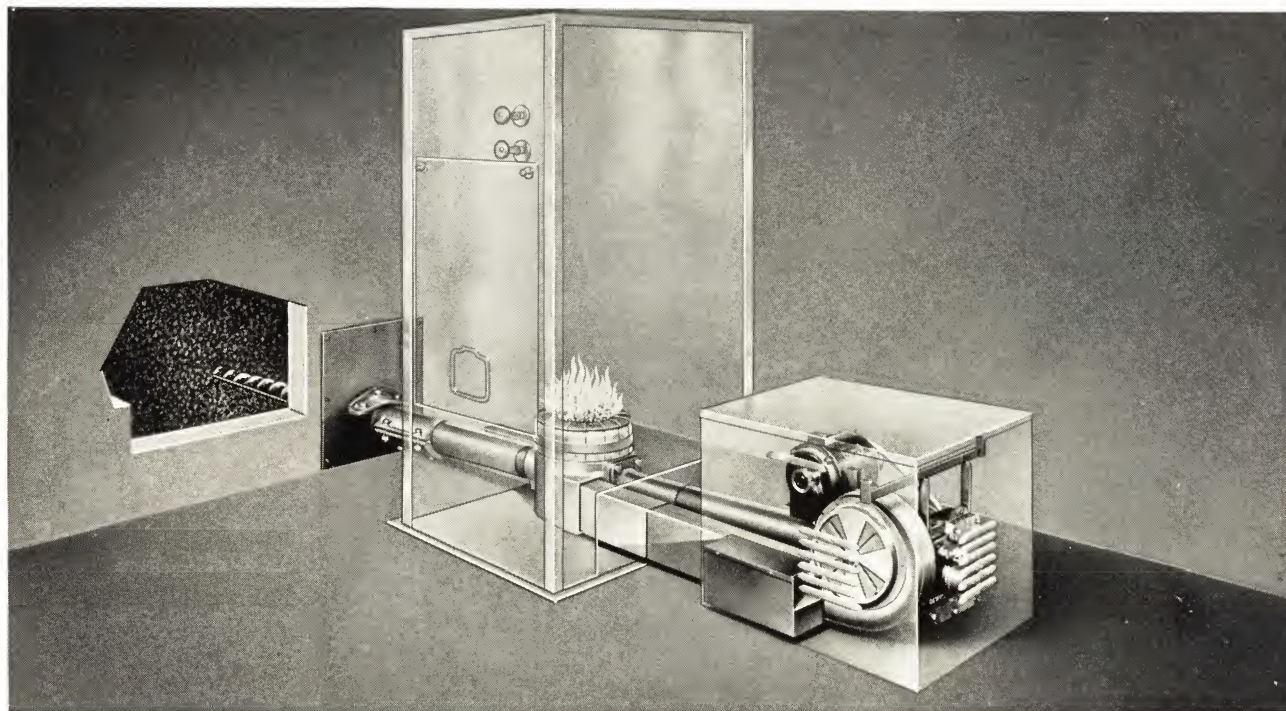
In addition to a complete line of models for commercial installations, there is also a model and size of COMBUSTIONEER for every domestic heating plant.

Domestic models are sturdily built, attractive in appearance and may be quickly and easily installed in hot water, steam, vapor or warm air residence plants. To conform to conditions in any basement, they may be installed from front,

rear or side. They incorporate such outstanding COMBUSTIONEER features as the Breathing Fuel Bed, Automatic Respirator, Automatic Safety Clutch, extra large, dust-proof hopper and full opening lids.

They are available in either hopper or Bin Feed models.

Complete details will be furnished on request.



Combustioneer RAMFEED STOKERS

SINGLE RETORT UNDERFEED TYPE S

The COMBUSTIONEER stokers described and illustrated on this and following pages are of the ramfeed type. Brief description and illustrations of this line follows.

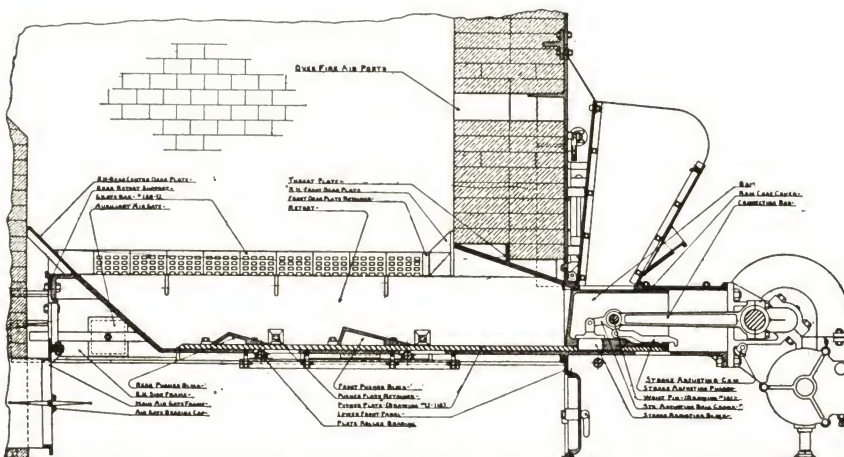
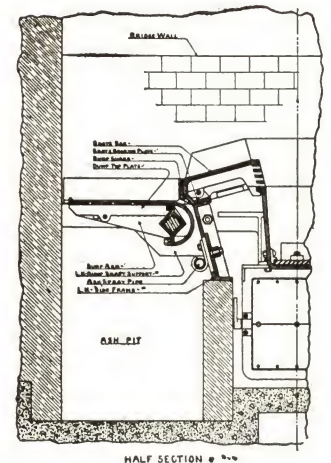
The COMBUSTIONEER Underfeed Stoker Type "S" is a truly heavy duty machine of the well-known central retort, side-dump type, designed to deliver efficient, dependable service, and to stand up under the most severe operating conditions. It is available in the popular unit arrangement with individual forced draft fans driven by either a well protected adjustable speed motor, or a two-stage steam turbine, and also in many variations of group drive from line shaft with common forced draft fan operated by steam engine, turbine, or motor. Motor driven unit stokers are equipped with a limit switch interlocked with the automatic control which always stops the ram in the "in" position with the throat opening sealed, which prevents fire burning back through hopper. Study of the illustrations and specifications on this page and the next will reveal that it offers many special features not ordinarily found in this class of equipment.

SPECIFICATIONS

FRAME AND GRATE—The frame of the COMBUSTIONEER Underfeed Stoker is entirely of Cast Iron, and is completely self-contained and independent of the brickwork. Under each side frame a division wall or plate extends from the stoker front to the bridge-wall, and divides the space under the grate surface to form a central air chamber with an ash pit on either side to receive refuse dropped from the dump plates. The center section of the grate surface is composed of heavy, well air-cooled, combination grates and tuyeres extending from the edge of the retort to renewable grate bearing plates bolted on top the side frames, which are held in place by slip-through retaining rods. These rods also hold in place the heavily-ribbed front and rear dead plates used to complete the grate surface and to prevent clinker adhesion to the brickwork.

DUMP PLATES—The two dump sections of the grate are of unusually heavy design with fire bearing surface made up of heavy, non-warping top plates which are replaceable without disturbing the supporting arm and guard assembly. The dump shaft is made in two sections, of

such length that the complete dump assembly may be removed without disturbing the brickwork. Dump shaft bearing supports extend into the brick side wall, bracing the side frame and maintaining dump clearance along the wall.

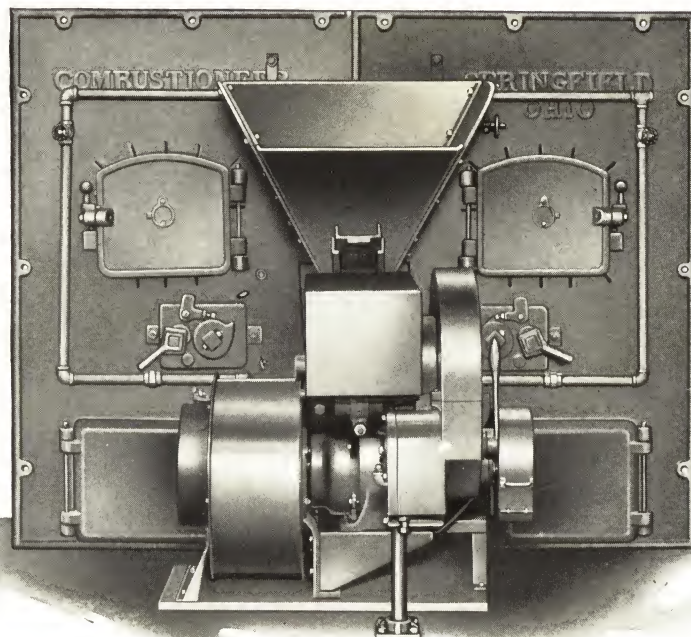


Dumps are manually operated through a 2 to 1 ratio enclosed gearing which, to raise the dump, requires only half the effort that would be needed with the wrench applied directly to the dump shaft, and also raises the dump with a downward movement of the wrench. Dumps are held level by an adjustable pawl and ratchet located on the dump operating gear box.

Combustioneer RAMFEED STOKERS TYPE S

DOORS, FRONT AND HOPPER — All access and inspection doors have safety latches and are carefully fitted to the heavy sectional cast iron stoker front. Inspection doors are extra large and have an indestructible "Cast-in" fire-brick lining, also small peep holes in the center of the door. Sectional cast iron coal hopper with a steel extension is standard equipment.

FEEDING MECHANISM — A reciprocating ram and Roller-Bearing plate operate in the bottom of the retort, receiving charges of fuel from the hopper and distributing it uniformly over the entire grate surface. Different rates of coal delivery are obtained by changing the stroke of the plate in relation to that of the ram. Plate stroke adjustments are made while the stoker is in operation by changing the position of a small weight arm on the crank shaft bearing. The plate is the only moving part of the stoker inside the furnace, and is at all times well protected by green fuel. The ram and plate are mechanically operated by a steel connecting rod and crank shaft through an all-steel Spur-gear-type speed transformer of neat and compact design, equipped with roller bearings and using heat-treated alloy steel gears operating in an oil bath. The gearing is fully enclosed and protected from damage (due to accidental blocking of the ram) by a built-in safety device which eliminates shearing pins, and also

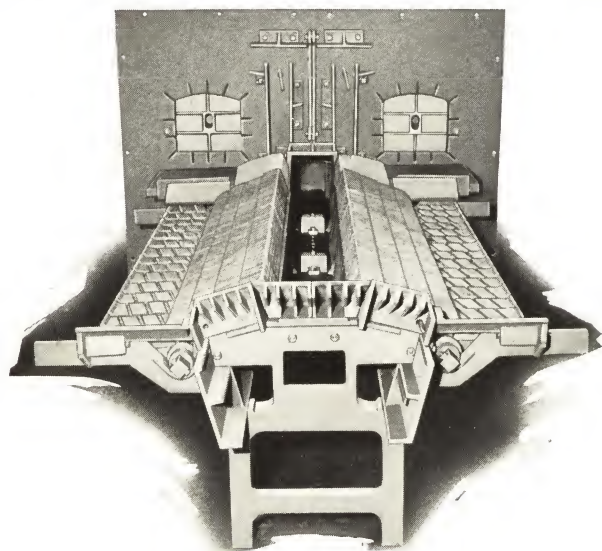


serves as a clutch to make service stops and starts of the stoker. All bearings not flooded with oil are lubricated by Alemite-Zerk high pressure oilers.

AIR CONTROL — Slightly preheated air is supplied over the front part of the fire to shorten the flame length where combustion space is restricted. The air is regulated by a Vortex damper controlled from the front of the stoker. Auxiliary air gates are provided through which air under pressure may be supplied under the dump sections to burn out fixed carbon before cleaning fires.

GENERAL — The Type "S" Stoker is made in two grate lengths and four grate widths, giving six different grate areas, with coal burning capacities up to 2,000 lbs. per hour. If the stoker is installed with remotely located forced draft equipment, it is chain driven from a line shaft mounted on the stoker front or in a trench below floor level. All chain drives are enclosed in substantial dust-tight guards. Individual unit-type stokers have a drive direct from the motor which is built-in as part of the stoker.

The value of the COMBUSTIONEER Type "S" Stokers has been proved over many years in all sorts of installations. Built completely in our own modern plant, of carefully selected materials, they can be depended upon to give a long life of economical, highly satisfactory service.



***Combustioneer* RAMFEED STOKERS**

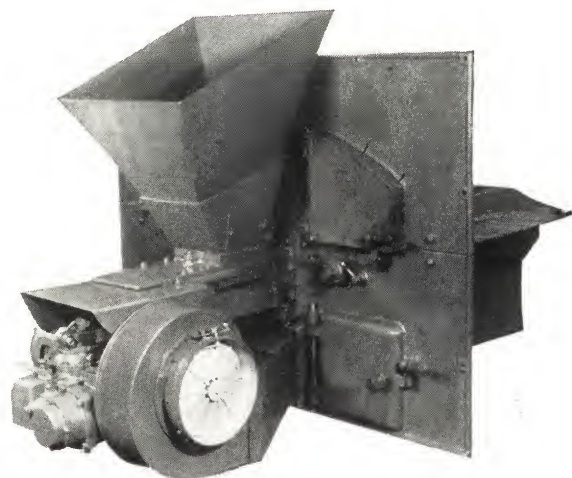
TYPE J

A compact plunger-fed unit with or without side-dump feature, which fills the long-felt need of a high quality automatic stoker for the small and medium size boiler and heating plants. The Type "J" Ramfeed stoker is designed so that if desired it can be applied to boilers where the waterleg is only 17 in. above the floor line.

In offering the COMBUSTIONEER Type "J" Stoker we feel the just pride of the precision manufacturer. From the tip of the totally enclosed gear unit to the toe of the last furnace casting, the design of each and every individual part is the result of many years' experience in the building of automatic stoker equipment.

Such features as cast-iron hopper base, refractory-lined fire doors, air-cooled front wall support, plunger feed with push-rod for secondary fuel distribution, quick-detachable side dump plates, and air tight division plates between the air chamber and ash pits. Auxiliary air grates are provided through which air under pressure may be supplied under the dump grate sections to burn out fixed carbon before cleaning fires. Ash sprays can be furnished if desired.

Only in stokers costing hundreds of dollars more is it



possible to duplicate the details of construction, the fuel control, the fuel-bed action, and the general all-around performance of this Type "J" Stoker.

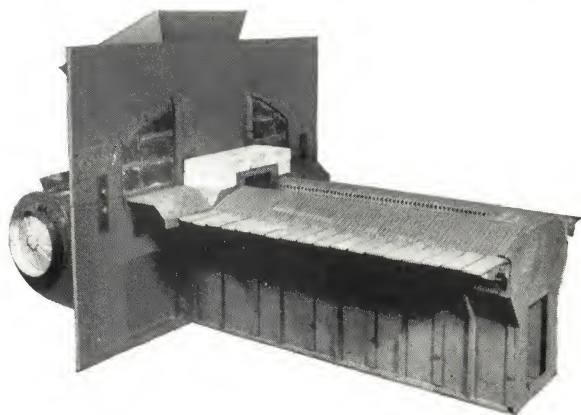
Auxiliary equipment is of the best.

Whatever your plant conditions may be, if there is a "stoker answer" to your problem, COMBUSTIONEER has it.

The type "J" is for application to small and medium-size plants of from 40 to 150 Hp. capacity, or supplying steam to from 4,000 to 15,000 square feet of steam radiation.

Manufactured in several different lengths and widths, practically any desired grate area can be obtained.

H.R.T. boilers, fire box boilers, cast iron boilers, welded boilers, riveted boilers, all kinds of steam and heat generating equipment, with fire boxes long and narrow or short and wide, can be served successfully by COMBUSTIONEER Type "J" Stoker.



COMBUSTIONEER DIVISION
THE STEEL PRODUCTS ENGINEERING COMPANY
SPRINGFIELD, OHIO

FOR APARTMENTS AND FACTORIES • HOMES • SCHOOLS

Combustioneer

AUTOMATIC

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